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INVERTEBRATE FAUNA OF THE INTERTIDAL ZONE OF THE TOKARA ISLANDS

XI. HYDROIDA¹⁾

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With Plates XXIII-XXIV

The following is a report on the hydroids obtained by the Tokara Scientific Research Party of the Osaka Municipal Museum of Natural History in June and July of 1953. The materials were collected by Dr. T. TOKIOKA of the Seto Marine Biological Laboratory, who took part in the expedition, from the intertidal zone of Takarazima and Nakanosima in the Tokara Islands which range between Kyushu and the Ryukyu Islands in the southern Japanese water. These were submitted to the writer for identification through the courtesy of Dr. T. TOKIOKA.

The materials were composed of 4 vials, of which one from Takarazima and other 3 from Nakanosima. Two vials were filled with formalin solution, while other two were entirely dried up. Six species in 6 genera and 2 families are represented, among them one species can not be securely identified because the specimen is poorly preserved.

The species here treated are as follows:

Sertularidae

Dynamena tubuliformis MARKTANNER-TURNERETSCHER

Sertularia distans (LAMOUROUX)

Plumularidae

Monothea obliqua (THOMPSON)

Plumularia setacea (LINNÉ)

Heterotheca sp.

Aglao phenia amoyensis HARGITT

Of the species mentioned above, the former 4 are the previously known species from middle Japanese water but the last one, *Aglao phenia amoyensis*, has heretofore been recorded only through its original discovery, from Amoy, South China.

1) Scientific Survey of the Tokara Islands, Report No. 14.

Concerning the hydroid fauna of the southern Japanese water references are very scarce, and we have only the paper of JÄDERHOLM (1919) which dealt with the specimens from Kyushu and the Goto Islands. So this report seems to be an interesting one, though the collection is neither rich in species nor in individuals.

The writer wishes to thank Dr. T. TOKIOKA for the privilege of examining this collection, and Dr. H. HATTORI for his kind suggestions and for supplying the specimens of *Heterotheca* preserved at the Biological Laboratory of the Imperial Palace for comparison. Thanks are also due to Prof. T. UCHIDA, under whose guidance this study was carried out.

Dynamena tubuliformis MARKTANNER-TURNERETSCHER

(Pl. XXIII, Figs. 1, 2)

Sertularia tubuliformis: JÄDERHOLM, 1919, p. 15.

Dynamena tubuliformis: STECHOW, 1923, p. 12.

Thuiaria tubuliformis: HARGITT, 1924, p. 493, pl. 4, fig. 16; —, 1927, p. 508, pl. 1, figs. 4, 5.

Several specimens without gonosomes were collected at Takarazima and Nakano-sima and were preserved in formalin solution.

The colony attains about 27 mm in height in the largest specimen examined. The stem is almost straight throughout, irregularly and sparingly branched, but sometimes nearly alternate branching gives the colony a geniculate aspect. The branch gives off at an angle of 40° to 50° with the stem, but no particular difference is present in the appearance of a branch and a main stem. The stem and branches are divided into irregular internodes which are rather short and usually bear one or two pairs of the hydrothecae. The node is usually quite sharply marked but is often not well marked. The hydrothecae are slender, not closely placed on stem and branches, usually in nearly opposite pairs. These are rather long tubular in shape, and deeply immersed into the stem near the base but less so on the other part of stem and branches. The distal part of the hydrotheca is slightly narrowing toward the margin, about one-third of adcauline wall free, and abruptly turned outward ending in large blunt paired teeth which support a two-flapped operculum. The abcauline wall of the hydrotheca measures 0.40–0.45 mm in length, and the breadth at the widest part 0.19 mm and at the margin 0.15 mm.

The gonosomes are absent.

As the hydranths of this specimens show no abcauline blind-sack, I include here the species in the genus *Dynamena*. This specimens closely agree with those described by HARGITT from South China and the Philippine Islands. The species has been reported by JÄDERHOLM from Misaki and the Bonin Islands but was not contained in INABA's and STECHOW's works. It may be mentioned here I have recently examined the species among the specimens from Seto. The specimens from Misaki, the Bonin

Islands, the Philippine Islands and Seto were all devoid of gonosomes while the only one from Amoy, South China bore gonosomes.

Besides the above localities it has been recorded from the Red Sea, from the Natal coast of South Africa, and from the coast of Florida, the West Indies and the coast of Brazil, in the Atlantic.

Sertularia distans (LAMOUROUX)

(Pl. XXIII, Fig. 3)

Sertularia sp.: INABA, 1890, figs. 60-62.

Sertularia distans: STECHOW, 1913, p. 147, fig. 125; JÄDERHOLM, 1919, p. 14, pl. 3, fig. 7; LÉLOUP, 1938, p. 17.

Dynamena distans: STECHOW, 1923, p. 12.

Some small specimens without gonosomes were collected at Nakanosima and were all dried up.

The colony is in the form of an erect stem, unbranched, delicate, attaining about 8 mm in height. The stem is not fascicled, straight throughout, divided into regular internodes, each of which bears a pair of strictly opposite hydrothecae. The hydrothecae in a pair are in contact with each other in about a half of the adcauline wall. They are rather distinct, tubular in shape, not elongate, moderately swollen below. The margin of the hydrotheca has blunt paired teeth which support a two-flapped operculum. The abcauline wall of the hydrotheca measures 0.19-0.22 mm in length, and the breadth at the widest part 0.15 mm and at the margin 0.09 mm.

The gonosomes are absent.

This species has been recorded from middle Japan. INABA reported the species from Misaki and JÄDERHOLM from the Bonin Islands and Misaki. Recently LÉLOUP recorded the species from the northern part of Sagami Bay.

The species is distributed in western coast of the Pacific, and the Atlantic and the Mediterranean.

Monothecha obliqua (THOMPSON)

(Pl. XXIII, Fig. 4)

Plumularia obliqua: JÄDERHOLM, 1919, p. 22, pl. 5, fig. 6.

Monothecha obliqua: STECHOW, 1923, p. 17.

Plumularia (Monothecha) obliqua: STECHOW and UCHIDA, 1931, p. 565.

Some small colonies without gonosomes were collected at Nakanosima and were all dried up.

The colony is small, very delicate, attaining about 8 mm in height, growing on sea-weeds. The stem is not fascicled, mostly erect, unbranched, divided into regular internodes, each of which gives off a hydrocladium from a process at its distal end. The hydrocladia are alternately present, lying in the same plane, short, with two

small joints at the base. Each of the hydrocladia bears a single hydrotheca. The hydrothecae are campanulate, with an entire margin. There are two nematophores on each internode of the stem, one on just below the middle of the internode and one on the axil of each hydrocladium. On each hydrocladium three nematophores are present, two of which supracalcine and one mesial at the base of the hydrotheca. The hydrocladia measure about 0.32 mm in length.

The gonosomes are not found.

The species is one of the common species in Japanese water. Although the species was not contained in INABA's and STECHOW's works, JÄDERHOLM (1919) reported it covering sea-weeds from Misaki. Afterwards the species was described from Mutsu Bay by STECHOW and UCHIDA (1931).

The species is distributed in Japan, Australia, the Mediterranean and England.

Plumularia setacea (LINNÉ)

(Pl. XXIV, Figs. 1, 2)

Plumularia setacea: INABA, 1890, figs. 8-10; STECHOW, 1909, p. 79; —, 1913, p. 89; JÄDERHOLM, 1919, p. 20; STECHOW, 1923, p. 17.

Some small colonies which were all dried up were collected at Nakanosima.

The colonies are very delicate, reaching about 9 mm in height. The stem is simple, slightly flexuous, unbranched, divided into regular internodes, each bearing a hydrocladium. The hydrocladia are regularly alternate, present in the same plane, rather short, originating immediately below the joint of the stem. The hydrocladia are composed of longer and shorter internodes, which are alternately placed: the longer internodes are thecate ones and the shorter are non-thecate ones. At the base of each hydrocladium there are always 2 or 3 small joints which bear no hydrothecae. The hydrothecae are small, with an entire margin, rather distant. There are two supracalcine nematophores and a mesial nematophore to each hydrocladial internode, except for the basal part. There are two nematophores on each internode of the stem, one on the side opposite the hydrocladial process and one in the axil of each hydrocladium.

The gonosomes are not found.

The species has been reported by INABA (1890) and STECHOW (1909, 1913) from Sagami Bay and by JÄDERHOLM (1919) from Sagami Bay and the Goto Islands. The species has almost cosmopolitan distribution, although it seems to be absent from the Arctic and Antarctic regions.

Heterotheca sp.

(Plate XXIV, Figs. 3, 4)

A few fragmentary specimens in dried state were found in Nakanosima, covering

sea-weeds. The form was considerably damaged for the drying, so detailed survey on its morphology was impossible. The trophosome, so far as I could understand from the present specimens, is as follows:

The colony is plumose in shape, attaining about 7 mm in height. The stem is divided into regular internodes, each of which bears a hydrotheca and a pair of supracalycine, a pair of lateral and one mesial nematophores, and a hydrocladium at the distal end. The hydrocladia are alternate, not in the same plane, divided into regular internodes, each of which bears a hydrotheca and 5 nematophores as in the stem internode. The hydrothecae are approximately present; the margin bears a pair of blunt shoulders. The supracalycine nematophores are small but the lateral ones are very long surpassing the hydrothecal margin. The mesial nematophores are small and unmovable.

The gonosomes are not found.

Although the specimens are mostly in poor condition as above stated, these may be referred to the genus *Heterotheca*, which was created by STECHOW (1921). This genus is characterized for having unmovable mesial nematophores and cauline hydrothecae. Recently I have had an opportunity to examine specimens which were collected in southern Kyushu and preserved at the Biological Laboratory of the Imperial Palace, and were referred to *Heterotheca polymorphus* var. *sibogae* (BILLARD) and *H. campanula* (BUSK). These are, however, clearly distinguished from the present species. Although the species seems to me probable to be a new species of *Heterotheca*, I can make no further mention here at the present state.

Aglaophenia amoyensis HARGITT

(Plate XXIV, Figs. 5, 6)

Aglaophenia amoyensis: HARGITT, 1927, p. 517, pl. 1, fig. 3.

Several colonies were collected at Nakanosima.

The colonies are small, plumose in shape, attaining 7 mm in height. The stem is unbranched, not fascicled, divided into regular internodes, each of which supports a hydrocladium on a process near its distal end. The hydrocladia are alternate, not in the same plane, rather short, divided into regular short internodes, each of which bears a hydrotheca. The hydrothecae are closely approximated, having about 8 rather acute teeth around the margin. The intrathecal ridge is short and thin. The mesial nematophore is extensively adnate to the hydrotheca, only the terminal portion being free and reaching just below the margin of the hydrotheca. The supracalycine nematophores slightly overtopping the hydrothecal margin. In each internode of the stem a cauline nematophore is present.

The gonosomes are not found.

This is the second report of the species since the original description of HARGITT (1927) from Amoy, South China. The specimens from Amoy were found among

sponges and bryozoans, and on a dead stem of an alcyonarian, while the present specimens are found to cover sea-weeds. The present specimens closely agree with the description of HARGITT.

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EXPLANATION OF PLATES XXIII-XXIV

PLATE XXIII

- | | |
|---|------|
| Fig. 1. <i>Dynamena tubuliformis</i> MARKTANNER-TURNERETSCHER. | |
| Portion of stem and branches. | × 25 |
| Fig. 2. <i>Dynamena tubuliformis</i> MARKTANNER-TURNERETSCHER. | |
| Portion of branch showing hydrothecae. | × 35 |
| Fig. 3. <i>Sertularia distans</i> (LAMOUROUX). Portion of colony with hydrothecae. | × 50 |
| Fig. 4. <i>Monothecha oblique</i> (THOMPSON). Portion of stem with hydrocladia and hydrothecae. | × 75 |

PLATE XXIV

- | | |
|--|------|
| Fig. 1. <i>Plumularia setacea</i> (L.). Portion of stem. | × 75 |
| Fig. 2. <i>Plumularia setacea</i> (L.). Portion of stem and hydrocladium. | × 75 |
| Fig. 3. <i>Heterotheca</i> sp. Portion of stem with hydrocladia and hydrothecae. | × 75 |
| Fig. 4. <i>Heterotheca</i> sp. Portion of hydrocladium. | × 75 |
| Fig. 5. <i>Aglaophenia amoyensis</i> HARGITT. Portion of stem. | × 75 |
| Fig. 6. <i>Aglaophenia amoyensis</i> HARGITT. Portion of hydrocladium. | × 75 |



